R^2 is an acyl group;

CO_2R^3 is a carboxy group or a carboxylate anion, or R^3 is a readily removable carboxy protecting group;

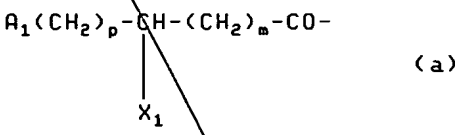
R^4 represents hydrogen or up to four substituents selected from alkyl, alkenyl, alkynyl, alkoxy, hydroxy, halogen, amino, alkylamino, acylamino, dialkylamino, CO_2R, $CONR_2$, SO_2NR_2 (where R is hydrogen or C_{1-6} alkyl), aryl and heterocyclyl, which may be the same or different and wherein any R^4 alkyl substituent is optionally substituted by any other R^4 substituent;

X is S, SO, SO_2, O or CH_2;

m is 1 or 2;

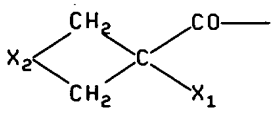
n is 0;

"acyl" is selected from the group consisting of formula (a) to (f):

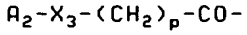


(a)

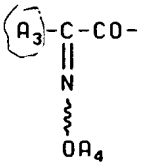
(b)



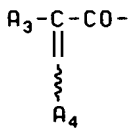
(c)



(d)



(e)



(f)

wherein p is 0, 1 or 2;

m is 0, 1 or 2;

A_1 is C_{1-6} alkyl, substituted C_{1-6} alkyl, C_{3-6} cycloalkyl, cyclohexenyl, cyclohexadienyl, or an aromatic or heteroaromatic group;

X_1 is a hydrogen or halogen atom, a carboxylic acid, carboxylic ester, sulphonic acid, azido, tetrazolyl, hydroxy, acyloxy, amino, ureido, acylamino, heterocyclylamino, guanidino or acylureido group;

A_2 is an aromatic or heteroaromatic group, a substituted alkyl group, or a substituted dithietane;

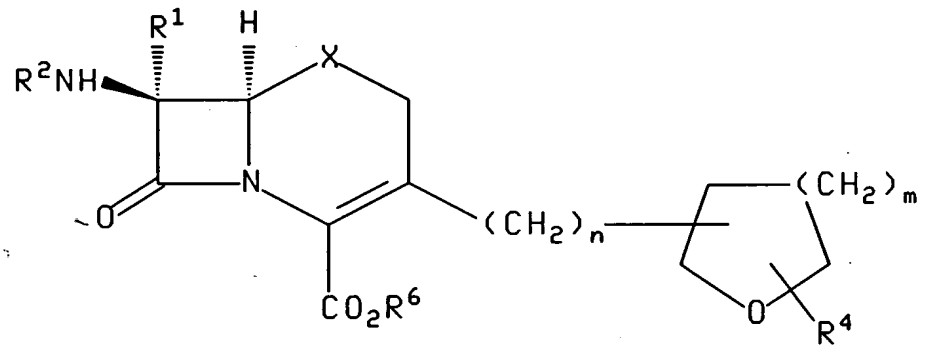
X_2 is a $-CH_2OCH_2-$, $-CH_2SCH_2-$ or alkylene group;

X_3 is an oxygen or sulphur atom;

A_3 is an aryl or heteroaryl group; and

A_4 is hydrogen, C_{1-6} alkyl, C_{3-8} cycloalkyl, C_{3-8} cycloalkyl(C_{1-6})alkyl, C_{1-6} alkoxycarbonyl(C_{1-6})alkyl, C_{2-6} alkenyl, carboxy(C_{1-6})alkyl, C_{2-6} alkynyl, aryl or C_{1-6} alkyl substituted by up to three aryl groups.

58. A compound as claimed in claim 57 having the formula (Ia):



(Ia)

wherein R^1, R^2, R^4, m, n and X are as defined with respect to formula (I) in claim 57 and the group CO_2R^6 is CO_2R^3 where CO_2R^3 is a carboxy group or a carboxylate anion, or a pharmaceutically acceptable salt or in vivo hydrolysable ester thereof.

59. A compound as claimed in claim 57 wherein R^1 is hydrogen.

60. A compound as claimed in claim 57 wherein A_1 is optionally substituted phenyl, X_1 is hydrogen or amino, A_2 is optionally substituted phenyl, X_3 is oxygen, A_3 is aminothiazolyl, aminothiadiazolyl or furyl, and R^4 is hydrogen, C_{1-6} alkyl, or carboxy C_{1-6} alkyl.

61. A compound as claimed in claim 57 wherein CO_2R^3 is carboxy or a carboxylate anion or R^3 is t-butyl, 4-methoxybenzyl, diphenylmethyl, acetoxymethyl, acetoxyethyl, pivaloyloxymethyl, propan-2-yloxycarbonyloxyethyl or 2-ethoxycarbonyl-but-2-enyl.

62. A compound as claimed in claim 57 wherein the cyclic ether group bonded to the 3-position of the cephalosporin nucleus is unsubstituted or substituted by up to three substituents selected from C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} alkoxycarbonyl, C_{1-6} alkanoyloxy C_{1-6} alkyl or C_{1-6} alkoxy C_{1-6} alkyl.

63. A compound as claimed in claim 57 wherein m is 1.

64. A compound as claimed in claim 57 wherein the cyclic ether group is a tetrahydrofuran-2-yl or a tetrahydropyran-2-yl group.

65. A compound as claimed in claim 57 selected from the group consisting of:

sodium (6R,7R)-7-[2-(2-aminothiazol-4-yl)-2-(Z)-methoxyiminoacetamido]-3-[(RS)-tetrahydrofuran-2-yl]ceph-3-em-4-carboxylate;

pivaloyloxymethyl(6R,7R)-7-[2-(2-aminothiazol-4-yl)-2-(Z)-methoxyiminoacetamido]-3-[(RS)-tetrahydrofuran-2-yl]ceph-3-em-4-carboxylate;

sodium (6R,7R)-7-[2-(2-aminothiazol-4-yl)-2-(Z)-methoxyiminoacetamido]-3-[(RS)-tetrahydropyran-2-yl]ceph-3-em-4-carboxylate;

pivaloyloxymethyl(6R,7R)-7-[2-(2-aminothiazol-4-yl)-2-(Z)-methoxyiminoacetamido]-3-[(RS)-tetrahydropyran-2-yl]ceph-3-em-4-carboxylate;

(6R,7R)-7-[2-(2-aminothiazol-4-yl)-2-(Z)-hydroxyiminoacetamido]-3-[(RS)-tetrahydrofuran-2-yl]ceph-3-em-4-carboxylic acid;

sodium (6R,7R)-7-[2-(2-aminothiazol-4-yl)-2-(Z)-methoxyiminoacetamido]-3-[(S)-tetrahydrofuran-2-yl]ceph-3-em-4-carboxylate;

pivaloyloxymethyl(6R,7R)-7-[2-(2-aminothiazol-4-yl)-2-(Z)-methoxyiminoacetamido]-3-[(S)-tetrahydrofuran-2-yl]ceph-3-em-4-carboxylate;

sodium (6R,7R)-7-[2-(2-aminothiazol-4-yl)-2-(Z)-methoxyiminoacetamido]-3-[(R)-tetrahydrofuran-2-yl]ceph-3-em-4-carboxylate;

pivaloyloxymethyl(6R,7R)-7-[2-(2-aminothiazol-4-yl)-2-(Z)-methoxyiminoacetamido]-3-[(R)-tetrahydrofuran-2-yl]ceph-3-em-4-carboxylate;

diphenylmethyl (6R,7R)-7-phenylacetamido-3-[(RS)-tetrahydrofuran-2-yl]ceph-3-em-4-carboxylate;

sodium (6R,7R)-7-[2-(2-aminothiazol-4-yl)-2-(Z)-methoxyiminoacetamido]-3-[(RS)-tetrahydrofuran-3-yl]ceph-3-em-4-carboxylate;

acetoxymethyl(6R,7R)-7-[2-(2-aminothiazol-4-yl)-2-(Z)-methoxyiminoacetamido]-3-[(S)-tetrahydrofuran-2-yl]ceph-3-em-4-carboxylate;

sodium (6R,7R)-7-[2-(2-aminothiazol-4-yl)-2-(Z)-methoxyiminoacetamido]-3-(5-methoxymethyltetrahydrofuran-2-yl]ceph-3-em-4-carboxylate;

sodium (6R,7R)-7-[2-(2-aminothiazol-4-yl)-(Z)-pent-2-enamido]-3-[(S)-tetrahydrofuran-2-yl]ceph-3-em-4-carboxylate;

sodium (6R,7R)-7-[2-(2-aminothiazol-4-yl)-2-(Z)-methoxyiminoacetamido]-3-[(S)-tetrahydrofuran-2-yl]ceph-3-em-4-carboxylate;

(RS)-1-acetoxyethyl(6R,7R)-7-[2-(2-aminothiazol-4-yl)-2-(Z)-methoxyiminoacetamido]-3-[(S)-tetrahydrofuran-2-yl]ceph-3-em-4-carboxylate;

(6R,7R)-7-[2-(2-aminothiazol-4-yl)-2-(Z)-carboxymethoxyiminoacetamido]-3-[(RS)-tetrahydrofuran-2-yl]ceph-3-

em-4-carboxylic acid disodium salt;

sodium (6R,7R)-7-[(R)-2-amino-2-(4-hydrophenyl)-acetamido]-3-[(S)-tetrahydrofuran-2-yl]ceph-3-em-4-carboxylate;

sodium (1S,6R,7R)-7-[2-(2-aminothiazol-4-yl)-2-(Z)-methoxyiminoacetamido]-3-[(S)-tetrahydrofuran-2-yl]ceph-3-em-4-carboxylate-1-oxide;

sodium 7-[2-(2-aminothiazol-4-yl)-2-(Z)-methoxyimino-acetamido]-3-(tetrahydrofuran-2-yl)-1-carba-1-dethiaceph-3-em-4-carboxylate;

sodium (6R,7R)-7-[2-(2-aminothiazol-4-yl)-2-(Z)-methoxyiminoacetamido]-3-[(S)-tetrahydrofuran-2-yl]ceph-3-em-4-carboxylate-1,1-dioxide;

(RS)-1-(propan-2-yl)oxycarbonyloxyethyl (6R,7R)-7-[2-(2-aminothiazol-4-yl)-2-(Z)-methoxyiminoacetamido]-3-[(S)-tetrahydrofuran-2-yl]ceph-3-em-4-carboxylate;

sodium (6R,7R)-7-[2-(2-aminothiazol-4-yl)-2-(Z)-methoxyiminoacetamido]-3-[(5R,2SR)-5-methyltetrahydrofuran-2-yl]ceph-3-em-4-carboxylate;

sodium (6R,7R)-7-[2-(furan-2-yl)-2-(Z)-methoxyimino-acetamido]-3-[(S)-tetrahydrofuran-2-yl]ceph-3-em-4-carboxylate;

sodium (6R,7R)-7-[2-(2-aminothiazol-4-yl)-2-(Z)-methoxyiminoacetamido]-3-[(S)-5,5-dimethyltetrahydrofuran-2-yl]ceph-3-em-4-carboxylate;

sodium (6R,7R)-7-[2-(2-aminothiazol-4-yl)-2-(Z)-methoxyiminoacetamido]-3-(5)-methoxycarbonyltetrahydrofuran-2-yl)ceph-3-em-4-carboxylate;

sodium (6R,7R)-7-[2-(2-aminothiazol-4-yl)-2-(Z)-methoxyiminoacetamido]-3-[3-methyltetrahydrofuran-2-yl]ceph-3-em-4-carboxylate; and

2-ethoxycarbonyl-(Z)-but-2-enyl (6R,7R)-7-[2-(2-aminothiazol-4-yl)-2-(Z)-methoxyiminoacetamido]-3-[(S)-tetrahydrofuran-2-yl]ceph-3-em-4-carboxylate.

~~66.~~ 10 A pharmaceutical composition comprising a compound of claim ~~58~~ 2 or a pharmaceutically acceptable salt or in vivo